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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Jan Boer

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EXAMINER

ELPENORD, CANDAL

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/562,619	Applicant(s) BOER ET AL.	
	Examiner CANDAL ELPENORD	Art Unit 2473	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 August 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-65 is/are pending in the application.
- 4a) Of the above claim(s) 1-21, 25 and 29-41 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22-24, 26-28, 43-65 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed August 31, 2010 have been fully considered but they are not persuasive.
2. The Applicant alleged that Kuchi et al (US 7,065,156 B1) used in the USC 102 (e) rejection of claims 1, 22, 26, 52 and 59 fails to teach or suggest claimed features: **“transmitting or receiving an indication of a duration to defer until a subsequent transmission, said indication transmitted such that said indication is capable of being interpreted by a lower order receiver by diagonally loading a SIGNAL field across said plurality of transmit antennas”**.
3. In response, the Examiner respectfully disagrees with the asserted arguments above because Kuchi '156 does anticipate the Applicant claimed invention.

In particular, Kuchi '156 diagonal of the signal field across a plurality of antennas where the training symbols are phase shifted to create diagonal loading (i.e. as shown in fig. 3b), col. 2, lines 21-43. What is shown in fig. 3b is the equivalent of fig. 4 of the Applicant's specification. In fig. 3b, a first training symbol is transmitted on a first set of N antennas and then an offset version of the first training symbol is transmitted on a second set of N antennas. The Applicant fails to show how diagonal loading is done

The Applicant further alleged that the present disclosure teaches "diagonally loading" in FIGS. 4 and 6 and the associated text. As seen in FIG. 4, *"diagonal loading" requires, for each antenna, transmitting on a particular distinct set of subcarriers while nulling the other subcarriers*. Clearly, a patentee is entitled to be his own lexicographer.

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See, e.g., *Rohm & Haas Co. v. Dawson Chemical Co., Inc.*, 557 F. Supp 739, 217

U.S.P.Q. 515,573 (Tex. 1983); *Loctite Corp. v. Ultraseal Ltd.*, 781 F.2d 861, 228

U.S.P.Q. 90 (Fed. Cir. 1985); and *Fonar Corp. v. Johnson & Johnson*, 821 F.2d 627, 3

U.S.P.Q.2d 1109 (Fed. Cir. 1987).

In response to the Applicant's argument above, the Examiner respectfully maintains that fig. 3b of Kuchi '156 is equivalent to the Applicant's fig. 4.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e. *diagonal loading" requires, for each antenna, transmitting on a particular distinct set of subcarriers while nulling the other subcarriers*) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In view of the above, the Examiner respectfully asserts that Kuchi '156 diagonal loading is commensurate with the Applicant's fig. 4. The rejection is maintained as follows.

Regarding the dependent claims, consider the above arguments because the dependent claims are not allowable by virtue of their dependency on claims 1, 22, 26, 52 and 59.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. **Claims 22, 26, 52, 59** are rejected under 35 U.S.C. 102(e) as being anticipated by Kuchi et al (US 7,065,156 B1).

Regarding claim 22, (Currently Amended) Kuchi '156 discloses a method for receiving data (see, receiving and transmitting of symbol stream, col. 2, lines 14-19) on at least one receive antenna (see, first set of antenna for receiving the input symbol stream, col. 2, lines 14-19, fig. 1a, 114a, col. 3, lines 24-27, lines 38-42) transmitted by a transmitter (fig. 1a, transmitter 100) having a plurality of transmit antennas in a multiple antenna communication system (fig. 1a, transmission system with multiple antennas (i.e. antennas 114a, 114b, 118a, 118b, col. 3, lines 13-18), said method comprising the step of: receiving an indication of a duration to defer until a subsequent transmission (see, symbol delay period which cause offset version, col. 4, lines 29-35, col. 3, lines 27-37), said indication transmitted such that said indication is capable of being interpreted by a lower order receiver by diagonally loading a SIGNAL field (fig. 1b to fig. 1c, 3a to fig. 3b where the training symbols are phase shifted) across said

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plurality of transmit antennas (see, alternate transmission bursts between the antennas (i.e. antennas 114a, 114b, 118a, 118b, col. 3, lines 13-18) due to phase shift, col. 5, lines 38-54); and deferring for said indicated duration (see, symbol delay period which cause offset version, col. 4, lines 29-35, col. 3, lines 27-37).

Regarding claim 26 (Currently Amended) Kuchi '156 discloses a receiver (fig. 1a, 1b, 1c, fig. 3a, transmitter receiving of input data symbol, see, receiving and transmitting of symbol stream, col. 2, lines 14-19) in a multiple antenna communication system (fig. 1a, transmission system with multiple antennas (i.e. antennas 114a, 114b, 118a, 118b, col. 3, lines 13-18) having at least one transmitter (fig. 1a, transmitter 100) having a plurality of transmit antennas (fig. 1a to 1c, and fig. 3a, antennas 114a, 114b, 118a, 118b), comprising: at least one receive antenna (fig. 1a, second set of antenna for receiving the offset version of the symbol stream, col. 2, lines 33-43, col.5, lines 38-43) for receiving an indication of a duration to defer until a subsequent transmission (see, symbol delay period which cause offset version, col. 4, lines 29-35, col. 3, lines 27-37), said indication transmitted such that said indication is capable of being interpreted by a lower order receiver by diagonally loading a SIGNAL field (fig. 1b to fig. 1c, 3a to fig. 3b where the training symbols are phase shifted) across said plurality of antennas (see, alternate transmission bursts between the antennas (i.e. antennas 114a, 114b, 118a, 118b, col. 3, lines 13-18) due to phase shift, col. 5, lines 38-54); and means for deferring for said indicated duration (see, symbol delay period which cause offset

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version, col. 4, lines 29-35, col. 3, lines 27-37).

Regarding claim 52 (New) Kuchi '156 discloses a method for transmitting data (see, first set of antenna for receiving the input symbol stream, col. 2, lines 14-19, fig. 1a, 114a, col. 3, lines 24-27, lines 38-42) by a transmitter having a plurality of transmit antennas (fig. 1a to 1c, and fig. 3a, antennas 114a, 114b, 118a, 118b) in a multiple antenna communication system (fig. 1a, transmission system with multiple antennas (i.e. antennas 114a, 114b, 118a, 118b, col. 3, lines 13-18), said method comprising the step of: determining an indication of a duration to defer until a subsequent transmission (see, symbol delay period which cause offset version, col. 4, lines 29-35, col. 3, lines 27-37); and transmitting said indication of said duration to defer until said subsequent transmission (see, symbol delay period which cause offset version, col. 4, lines 29-35, col. 3, lines 27-37), said indication transmitted such that said indication is capable of being interpreted by a lower order receiver by diagonally loading a SIGNAL field (fig. 1b to fig. 1c, 3a to fig. 3b where the training symbols are phase shifted) across said plurality of transmit antennas (see, alternate transmission bursts between the antennas (i.e. antennas 114a, 114b, 118a, 118b, col. 3, lines 13-18) due to phase shift, col. 5, lines 38-54).

Regarding claim 59 (New) Kuchi '156 discloses a transmitter (fig. 1a, transmitter 100) in a multiple antenna communication system (fig. 1a, transmission system with multiple antennas (i.e. antennas 114a, 114b, 118a, 118b, col. 3, lines 13-18),

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comprising: N transmit antennas (fig. 1a to 1c, and fig. 3a, antennas 114a, 114b, 118a, 118b) for transmitting at least one training symbol using at least one of said N transmit antennas (see, first set of antenna for transmitting the training symbol, col. 3, lines 55-61, col. 2, lines 33-43) and transmitting an indication of a duration to defer until a subsequent transmission (see, symbol delay period which cause offset version, col. 4, lines 29-35, col. 3, lines 27-37) said indication transmitted such that said indication is capable of being interpreted by a lower order receiver by diagonally loading a SIGNAL field (fig. 1b to fig. 1c, 3a to fig. 3b where the training symbols are phase shifted) across said plurality of transmit antennas (see, alternate transmission bursts between the antennas (i.e. antennas 114a, 114b, 118a, 118b, col. 3, lines 13-18) due to phase shift, col. 5, lines 38-54).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
9. **Claims 23-24, 27-28, 43-44, 45-51, 53-58, 60-64** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuchi et al (US 7, 065, 156 B1) in view of Gardner et al (US 2005/0233709).

Kuchi '156 discloses all the claimed limitations above with the exception of claimed features:

Regarding claims 23, 27 (Original) the method, wherein said method is performed by a SISO receiver.

Regarding claims 24, 28 (Previously Presented) the method, wherein said indication is transmitted in said SIGNAL field that complies with the 802.11 a/g standards.

However, Gardner '709 from the same field of endeavor discloses the above claimed features:

Regarding claims 23, 27, 53 (Original) the method, wherein said method is performed by a SISO receiver (see, SISO legacy device, paragraph 0028, receiving antenna, paragraph 0022, 0025, paragraph 0034, the receiver detecting the long training symbol).

Regarding claims 24, 28, 60 (Previously Presented) the method, wherein said indication (see, the SIGNAL field provides receiver with information about the packet length and how long to defer, paragraph 0055, fig. 1, fig. 4 and fig. 8) is transmitted in said SIGNAL field that complies with the 802.11 a/g standards (see, legacy preamble/signal according to IEEE 802.11a, paragraph 0027-0028, fig. 1, Signal field, paragraph 0059, 0078, 0005).

In view of the above, having the delay diversity for multiple antennas of Kuchi '156, and the method for transmitting preamble with plurality of training symbols to provide co-existence between 802.11 devices and higher data rate MIMO devices of Gardner '709, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching features of Kuchi '156 by using teaching features as taught by Gardner '709 in order to provide compatibility between devices.

Kuchi '156 discloses all the claimed limitations above with the exception of claimed features:

Regarding claims 42, 47, 53, 61 (New) the method, wherein said duration is represented as a duration of said transmission.

Regarding claims 43, 48, 54, 62 (New) the method, wherein said duration is represented as a length of said transmission.

Regarding claims 44, 49, 55, 63 (New) the method, wherein said SIGNAL field indicates a number of said antennas in said multiple antenna communication system.

However, Gardner '709 from the same field of endeavor discloses the above claimed features:

Regarding claims 42, 47, 53, 61 (New) the method, wherein said duration is represented as a duration of said transmission (see, packet duration, paragraph 0059, lines 1-6).

Regarding claims 43, 48, 54 ,62(New) the method, wherein said duration is represented as a length of said transmission (see, the SIGNAL field provides the receiver with information about the packet and how long to defer, paragraph 0054, lines 9-12).

Regarding claims 44, 49, 55, 63 (New) the method, wherein said SIGNAL field (fig. 1, SIGNAL field) indicates a number (see, signal information indicating channel number, paragraph 0058, lines 15-17) of said antennas in said multiple antenna communication system (fig. 3, MIMO antennas 102, 104, transmitter 0 and 1, paragraph 0022, 0056).

In view of the above, having the delay diversity for multiple antennas of Kuchi '156, and the method for transmitting preamble with plurality of training symbols to provide co-existence between 802.11 devices and higher data rate MIMO devices of Gardner '709, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching features of Kuchi '156 by using teaching features as taught by Gardner '709 in order to provide compatibility between devices.

Kuchi '156 discloses all the claimed limitations above with the exception of claimed features:

Regarding claims 45, 50, 57, 64 (New) the method, wherein said number of said antennas allows said multiple antenna communication system to be scalable.

Regarding claims 46, 51, 58, 65 New) the method, wherein said number of said antennas allows a receiver to correlate channel coefficients with corresponding transmit antennas.

However, Gardner '709 from the same field of endeavor discloses the above claimed features:

Regarding claims 45, 50, 57, 64 (New) the method, wherein said number of said antennas allows said multiple antenna communication system to be scalable (see, multiple antennas, one or more receive and transmit antennas may be used, paragraph 0022, lin1 7-14)

Regarding claims 46, 51, 58, 65 New) the method, wherein said number of said antennas allows a receiver to correlate channel coefficients with corresponding transmit antennas (see, at the receive side, channel estimates for each transmitter to generate the impulse response estimate, paragraph 0071).

In view of the above, having the delay diversity for multiple antennas of Kuchi '156, and the method for transmitting preamble with plurality of training symbols to provide co-existence between 802.11 devices and higher data rate MIMO devices of Gardner '709, it would have been obvious to one of ordinary skill in the art at the time

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the invention was made to modify the teaching features of Kuchi '156 by using teaching features as taught by Gardner '709 in order to provide compatibility between devices.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kadous et al (US 2004/0121730 A1) discloses diagonal loading of training symbols across multiple mimo antennas.

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CANDAL ELPENORD whose telephone number is (571) 270-3123. The examiner can normally be reached on Monday through Friday 8:00AM to 5:00PM EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Bin Yao can be reached on (571) 272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Candal Elpenord/
Examiner, Art Unit 2473

/KWANG B. YAO/
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